wherein a quantity of light changes by changing a values of a voltage.

40 (New). A method according to claim 2,

wherein a quantity of light changes by changing a values of a voltage.

41 (New). A method according to claim 3,

wherein a quantity of light changes by changing a values of a voltage.

REMARKS

Applicant will address each of the Examiner's rejections in the order in which they appear in the Office Action.

Claim Rejections - 35 USC §102

Applicant will address each of the §102 rejections in the order in which they appear in the Office Action.

Rejection Over Yang et al.

The Examiner rejects Claims 1-6, 10, 17-19, 23, 26-28 and 32 under 35 USC §102 as being anticipated by Yang et al. This rejection is respectfully traversed.

Independent Claim 1 of the present application requires the liquid crystal have "a chiral smectic C_R

phase".[1] Applicant does not believe that Yang discloses or suggests such a crystal. Instead, Yang primarily appears to be directed to ferroelectric liquid crystal, though it does mention "chiral smectic phase" in col. 16.

Independent Claim 2 requires the step of "canceling out a spontaneous polarization of the liquid crystal material in a first period." Applicant does not believe that Yang discloses or suggests this step.

Independent Claim 3, as amended, requires the step of "applying a voltage of 0V to the liquid crystal material in a first period." See e.g. specification at page 9, lns. 22-25 and pages that follow. Applicant does not believe that Yang discloses or suggests such a step.

Therefore, it is respectfully submitted that independent Claims 1-3, and those claims dependent thereon, are not disclosed or suggested by Yang and are patentable thereover. Accordingly, it is requested that this rejection be withdrawn.

Rejection Over Saishu et al.

The Examiner also rejects Claims 12-15 under 35 USC §102(e) as being anticipated by Saishu et al. This rejection is also respectfully traversed.

Applicant has amended independent Claim 12 to include the limitation of "wherein the first period and the second period repeat." Applicant does not believe that such a feature is shown in Saishu.

Accordingly, it is respectfully submitted that independent Claim 12 and those claims dependent thereon are patentable over Saishu. Therefore, it is requested that this rejection be withdrawn.

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[1] Applicant has made a minor amendment herein to Claim 1 to correct an informality therein. This is not a narrowing amendment.

For at least the above-stated reasons, it is respectfully submitted that the §102 rejections have been overcome, and it is requested that they now be withdrawn.

Claim Rejections - 35 USC §103

The Examiner also rejects dependent Claims 7-9, 11, 16, 20-22, 24, 25, 29-31, 33 and 34 under 35 USC §103 as being unpatentable over Yang et al. in view of Saishu et al. This rejection is respectfully traversed. The dependent claims are allowable over the cited references for at least the reasons given above for the independent claims. Accordingly, it is requested that this rejection now be withdrawn.

New Claims

Applicant is adding new dependent Claims 35-41 herewith. These claims should be allowable for at least the reasons discussed above. Please charge our deposit account 50/1039 for the fee for these claims.

IDS

Applicant submitted an IDS with the application as filed but did not see a marked-up copy of the 1449 form with the Office Action. Applicant requests that such a marked-up copy be included with the next response by the Examiner.

In addition, Applicant believes that the PTO-892 form with the Office Action is incorrect. Instead of USP 6,162,360 cited therein, the form should list USP 6,163,360 (Tanaka et al.) as listed in the Office Action. Correction thereof is requested.

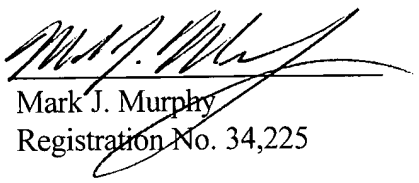
Conclusion

It is respectfully submitted that the present application is now in a condition for allowance.

If any further fee should be due for this amendment, please charge our deposit account 50/1039.

Favorable reconsideration is earnestly solicited.

Respectfully submitted,



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Marked up copy of the amendments made herein:

IN THE CLAIMS:

Please amend the claims as follows:

1(Amended). A method of driving a liquid crystal display device,

said liquid crystal display device including:

an orientation film over a substrate; and

a liquid crystal material over the orientation film, said liquid crystal material having a chiral smectic C_R phase and being continuously switched according to an electric field applied thereto,

said method comprising the steps of:

displaying a black level by the liquid crystal material in a first period;

applying a voltage to the liquid crystal material for a gradation display in a second period,

wherein the second period comes before or after the first period.

2. A method of driving a liquid crystal display device,

said liquid crystal display device including:

an orientation film over a substrate; and

a liquid crystal material over the orientation film, said liquid crystal material having a chiral smectic C_R phase and being continuously switched according to an electric field applied thereto,

said method comprising the steps of:

canceling out a spontaneous polarization of the liquid crystal material in a first period; and

applying a voltage to the liquid crystal material for a gradation display in a second period,

wherein the second period comes before or after the first period.

3(Amended). A method of driving a liquid crystal display device:

said liquid crystal display device including:

an orientation film over a substrate; and

a liquid crystal material over the orientation film, said liquid crystal material having a chiral smectic C_R phase and being continuously switched according to an electric field applied thereto,

said method comprising the steps of:

applying a voltage of 0V to the liquid crystal material in a first period; and

applying a voltage to the liquid crystal material for a gradation display in a second period,

wherein the second period comes before or after the first period.

4. A method according to claim 1,

wherein a plurality of active elements are formed over the substrate.

5. A method according to claim 4,

wherein each of the plurality of active elements applies a voltage to the liquid crystal material, and

wherein the voltage has an upper limit.

6. A method according to claim 5,

wherein the upper limit of the voltage has an absolute value of 7 V or less.

7. A method according to claim 1,

wherein a spontaneous polarization of the liquid crystal material is 40 nC/cm^2 - 150 nC/cm^2, and

wherein a thickness of the orientation film is 15 nm - 75 nm.

8. A method according to claim 1,

wherein a spontaneous polarization of the liquid crystal material is 20 nC/cm^2 - 40 nC/cm^2, and

wherein a thickness of the orientation film is 30 nm - 150 nm.

9. A method according to claim 1,

wherein a spontaneous polarization of the liquid crystal material is 40 nC/cm^2 or less.

10. A method according to claim 1,

wherein a first response time is defined as a response time of the liquid crystal material between a first voltage and a second voltage having an opposite polarity to the first voltage not via a voltage of 0V,

wherein a second response time is defined as a response time of the liquid crystal material between a first voltage and a second voltage having an opposite polarity to the first voltage via the voltage of 0V,

wherein the second response time is five times or more as short as the first response time.

11. A method according to claim 4,

wherein each of the plurality of active elements is connected in series to an auxiliary capacitor.

12(Amended). A method of driving a liquid crystal display device,

said liquid crystal display device including:

a plurality of thin film transistors being provided over a substrate;

an auxiliary capacitor being connected in series to each of the plurality of thin film transistors;

an orientation film over each of the plurality of thin film transistors; and

a liquid crystal material over the orientation film, said liquid crystal material having a spontaneous polarization and being continuously switched according to an electric field applied thereto,

said method comprising the steps of:

applying a voltage of 0V to the liquid crystal material in a first period; and

performing a gradation display in a second period,

wherein the second period comes before or after the first period,

wherein the first period and the second period repeat.

13. A method according to claim 12,

wherein a transmittance of the liquid crystal material is uniquely determined when voltages having a same absolute value and opposite polarities are applied thereto.

14. A method according to claim 12,

wherein the liquid crystal material has a same tilt angle when voltages having a same absolute value and opposite polarities are applied thereto.

15. A method according to claim 12,

wherein the liquid crystal material has a chiral smectic C_R phase.

16. A method according to claim 1,

wherein a spontaneous polarization of the liquid crystal is 100 nC/cm^2 or less, and

wherein the thickness of the orientation film is 75 nm or less.

17. A method according to claim 2,

wherein a plurality of active elements are formed over the substrate.

18. A method according to claim 17,

wherein each of the plurality of active elements applies a voltage to the liquid crystal material, and

wherein the voltage has an upper limit.

19. A method according to claim 18,

wherein the upper limit of the voltage has an absolute value of 7 V or less.

20. A method according to claim 2,

wherein the spontaneous polarization of the liquid crystal material is 40 nC/cm^2 - 150 nC/cm^2, and

wherein a thickness of the orientation film is 15 nm - 75 nm.

21. A method according to claim 2,

wherein the spontaneous polarization of the liquid crystal material is 20 nC/cm^2 - 40 nC/cm^2, and

wherein a thickness of the orientation film is 30 nm - 150 nm.

22. A method according to claim 2,

wherein the spontaneous polarization of the liquid crystal material is 40 nC/cm^2 or less.

23. A method according to claim 2,

wherein a first response time is defined as a response time of the liquid crystal material between a first voltage and a second voltage having an opposite polarity to the first voltage not via a voltage of 0V,

wherein a second response time is defined as a response time of the liquid crystal material between a first voltage and a second voltage having an opposite polarity to the first voltage via the voltage of 0V,

wherein the second response time is five times or more as short as the first response time.

24. A method according to claim 17,

wherein each of the plurality of active elements is connected in series to an auxiliary capacitor.

25. A method according to claim 2,

wherein the spontaneous polarization of the liquid crystal is 100 nC/cm^2 or less, and

wherein the thickness of the orientation film is 75 nm or less.

26. A method according to claim 3,

wherein a plurality of active elements are formed over the substrate.

27. A method according to claim 26,

wherein each of the plurality of active elements applies a voltage to the liquid crystal material, and

wherein the voltage has an upper limit.

28. A method according to claim 27,

wherein the upper limit of the voltage has an absolute value of 7 V or less.

29. A method according to claim 3,

wherein a spontaneous polarization of the liquid crystal material is 40 nC/cm^2 - 150 nC/cm^2, and

wherein a thickness of the orientation film is 15 nm - 75 nm.

30. A method according to claim 3,

wherein a spontaneous polarization of the liquid crystal material is 20 nC/cm^2 - 40 nC/cm^2, and

wherein a thickness of the orientation film is 30 nm - 150 nm.

31. A method according to claim 3,

wherein a spontaneous polarization of the liquid crystal material is 40 nC/cm^2 or less.

32. A method according to claim 3,

wherein a first response time is defined as a response time of the liquid crystal material between a first voltage and a second voltage having an opposite polarity to the first voltage not via the voltage of 0V,

wherein a second response time is defined as a response time of the liquid crystal material between a first voltage and a second voltage having an opposite polarity to the first voltage via the voltage of 0V,

wherein the second response time is five times or more as short as the first response time.

33. A method according to claim 26,

wherein each of the plurality of active elements is connected in series to an auxiliary capacitor.

34. A method according to claim 3,

wherein a spontaneous polarization of the liquid crystal is 100 nC/cm^2 or less, and

wherein the thickness of the orientation film is 75 nm or less.

Please add the following new claims:

35(New). A method according to claim 1,

wherein said liquid crystal material is driven by active matrix driving.

36 (New). A method according to claim 2,

wherein said liquid crystal material is driven by active matrix driving.

37 (New). A method according to claim 3,

wherein said liquid crystal material is driven by active matrix driving.

38 (New). A method according to claim 1,

wherein said black level is displayed by applying a voltage of 0V to the liquid crystal material.

39 (New). A method according to claim 1,

wherein a quantity of light changes by changing a values of a voltage.

40 (New). A method according to claim 2,

wherein a quantity of light changes by changing a values of a voltage.

41 (New). A method according to claim 3,

wherein a quantity of light changes by changing a values of a voltage.